

REMARKS

Claims 1-28 and 35-39 are all the claims presently pending in the application.

Claim 35 has been amended to define more clearly the features of the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicants specifically state that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Claims 35-37 stand rejected under 35 U.S.C. § 112, second paragraph.

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Kagami, et al. (Japanese Patent No. 2000-347043; hereinafter “Kagami - JP”).

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Application No. 09/534,458 (now U.S. Patent No. 6,703,188 to Kagami; hereinafter “Kagami ‘188”).

Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kagami or U.S. Application No. 09/534,458, in view of Kawabata, et al. (U.S. Patent No. 5,665,494; hereinafter “Kawabata”).

Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 08-320422, in view of Anderson ‘702 and Kagami JP.

Claims 1-28, 38, and 39 allegedly conflict with claims 1-8 and 11 of Kagami ‘188 under 37 C.F.R. § 1.78(b).

Claims 1-28, 38, and 39 stand rejected under the judicially created doctrine of obviousness-type double patenting as being upatentable over claims 1-8 and 11 of U.S. Application No. 09/534,458, in view of Houlihan, et al. (U.S. Patent No. 6,204,304; hereinafter “Houlihan”) and Kawabata.

Applicants traverse each of the rejections as follows.

I. THE CLAIMED INVENTION

Applicants' invention is directed to a method for manufacturing an optical transmission device which includes mixing a first photosetting resin comprising a first photopolymerization initiator and a first monomer or oligomer to be polymerized in a first polymerization type by the first photopolymerization initiator, and a second photosetting resin comprising a second photopolymerization initiator, and a second photosetting resin comprising a second photopolymerization initiator and a second monomer or oligomer to be polymerized in a second polymerization type that is different from said first polymerization type by said second photopolymerization initiator.

The method also includes forming a core portion of the optical transmission device by hardening said first photosetting resin by making a first irradiation that activates said first photopolymerization initiator but does not activate said second photopolymerization initiator; and forming a clad portion of the optical transmission device by hardening both the first photosetting resin and the second photosetting resin by making a second irradiation that activates both the first and second photopolymerization initiators.

In one exemplary aspect of the present invention, as defined, for example, by independent claim 1, the first irradiation has a wavelength shorter than the longest wavelength required to activate the first photopolymerization and longer than the longest

wavelength required to activate the second photopolymerization. In addition, one of the first polymerization type and the second polymerization type includes radical polymerization, and the other includes cationic polymerization.

This aspect of the method further includes detecting a quantity of output light output to the outside of the transmission and reception module via the optical fiber among the light beam of predetermined wavelength for communication that is output, adjusting a light input/output axis direction of the optical fiber such that the quantity of output light is substantially at maximum; and entering the light beam of predetermined wavelength for formation of the optical transmission device from the other end of the optical fiber into the optical transmission and reception module, while maintaining the adjusted light input/output axis direction of the optical fiber.

Unlike conventional methods, Applicants' invention includes a method of manufacturing an optical transmission device in which one of the first polymerization type and the second polymerization type includes radical polymerization, and the other includes cationic polymerization (as recited in claim 1), or in which the first irradiation has an amount of exposure more than the minimum amount of exposure required to harden the first photosetting resin substantially completely and smaller than the maximum amount of exposure not to harden the second photosetting resin completely (as recited in claim 15). In addition, Applicants' invention includes a method of forming an optical transmission device within an optical transmission and reception module, the method including introducing a light beam of a predetermined wavelength for formation of the optical transmission device into a space area for forming the optical transmission device within the optical transmission and reception module to harden a photosetting resin solution in an optical axis direction.

These novel features of the invention allow it to fabricate a cylindrical core portion of an optical transmission device more effectively and efficiently than conventional methods (e.g., see specification at page 2, lines 1-7).

II. THE 35 U.S.C. §112, SECOND PARAGRAPH REJECTION

Claims 35-37 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite.

With respect to claim 35, Applicants have amended claim 35 to recite “entering a second light beam of predetermined wavelength for formation of said optical transmission device from the other end of said optical fiber into said optical transmission and reception module”, to address the Examiner’s concerns.

With respect to claims 38 and 39, the Examiner asserts that Applicants should replace “acryloyl radical” with --acrylate-- and “metacryloyl radical” with --methacrylate-- because the “*radicals are not produced until polymerization is initiated, so it is more proper to describe the moiety. (i.e., these radicals are transient species formed during the irradiation and not the monomer found in photosetting solution.)*” (see Office Action at pages 2-3, numbered paragraph 3).

Applicants submit that claims 38 and 39 are “method” claims (i.e., not apparatus claims). Thus, Applicants submit that it is not improper to define the photosetting resins as comprising the “acryloyl radical” and the “metacryloyl radical”, respectively, because the photosetting resins will comprise the “acryloyl radical” and the “metacryloyl radical”, respectively, at some point during performance of the method.

III. THE PRIOR ART REJECTIONS

A. Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(a) as being anticipated by Kagami, et al. (Japanese Patent No. 2000-347043; hereinafter “Kagami - JP”). Also, claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Application No. 09/534,458 (now U.S. Patent No. 6,703,188 to Kagami; hereinafter “Kagami ‘188”).

The Examiner maintains that all of the features of claims 1-28, 38 and 39 are taught or suggested by Kagami JP or Kagami ‘188. Applicants submit that there are elements of the claimed invention that are not disclosed or suggested by Kagami JP or Kagami ‘188.

In the present Office Action, the Examiner notes that “applicants specifically describe the use of epoxies in the instant specification and in claim 38. The examiner also (sic) points to the use of cationic polymerization mechanism of curing epoxies within the art as evidenced by Kawabata et al. ‘494. The features argued as not taught are clearly taught in the portion of the reference cited, please note the same figures are used and show the same type of curing as those in the instant application. To suggest that the reference is not functioning in the manner disclosed in that reference (i.e., photopolymerization (sic) takes place with respect to the first irradiation) is without merit as the different spectral sensitivity shown in figure 2 specifically addresses this issue” (see Office Action at pages 4-5, bridging paragraph; emphasis added).

The Examiner appears to be relying on Applicants’ own disclosure and the Kawabata reference for disclosing the use of the cationic polymerization mechanism of curing epoxies. However, as the Examiner surely knows, the features for which the

Kagami reference is relied upon must be disclosed by the Kagami reference itself, not by Applicants' own disclosure or by another reference (e.g., Kawabata).

Accordingly, Applicants submit that Kagami does not specifically disclose, or for that matter suggest, that the acrylic monomers undergo free radical polymerization and the epoxy monomers undergo cationic polymerization. That is, Kagami does not specifically disclose (or for that matter suggest) different polymerization mechanisms between the first polymerization type and the second polymerization type.

Moreover, Applicants submit that Kagami does not inherently disclose these features. That is, Kagami does not disclose or suggest that acrylic monomers necessarily must undergo free radical polymerization and the disclosed epoxy monomers necessarily must undergo cationic polymerization.

Instead, Kagami merely discloses epoxy resin for high refractive photo curable resin and acrylic resin for low refractive curable resin. Kagami does not, however, disclose or suggest specifically which kinds of polymerization are caused by photoreaction.

In the Amendment under 37 C.F.R. § 1.116 filed on August 6, 2004 (which is incorporated herein by reference in its entirety), Applicants noted for the Examiner that epoxy monomers do not necessarily undergo cationic polymerization. That is, in addition to cationic polymerization, the epoxy resin of Kagami also could undergo anionic polymerization.

Thus, Kagami clearly does not inherently disclose or suggest that epoxy is polymerized by cationic polymerization.

In fact, in the Examiner's Interview Summary for the personal interview conducted on October 12, 2004, the Examiner himself acknowledged that “*[w]hile it may*

be possible to polymerize epoxies through other mechanisms, cationic is by far the dominant mechanism for photocuring epoxies”.

If the reference is silent on the issue, then all that is required is that another possibility exists, not that such a possibility would (or would not) be the preferable choice. Even assuming arguendo that cationic is by far the dominant mechanism for photocuring epoxies, the Examiner must back up such conclusory statements with a reference properly combinable with the other applied reference(s).

Clearly, as argued by Applicants and as acknowledged by the Examiner, it is possible to polymerize epoxies through other mechanisms. Thus, absent a specific disclosure in the Kagami reference that the epoxy monomers described in Kagami must undergo cationic polymerization, Kagami clearly cannot be said to disclose (either inherently or explicitly) that such is the case (i.e., cationic polymerization is not the only, or necessary, polymerization mechanism that can be used in Kagami).

Therefore, by the Examiner’s own admission, Applicants submit that Kagami does not disclose or suggest (either *inherently* or explicitly) this feature of the claimed invention.

Applicants also remind the Examiner that to anticipate a claim, the reference itself must disclose or suggest (either explicitly or inherently) each and every element of the claimed invention. That is, if the Examiner wishes to rely on other references in combination with the Kagami reference (e.g., Kawabata ‘494), then the Examiner should withdraw the rejection of these claims under 35 U.S.C. § 102, and rely on the rejection of these claims under 35 U.S.C. § 103(a) based on Kagami JP or Kagami ‘188 in view of Kawabata.

Further, Applicants also reiterate their argument that acrylic resin would generally undergo radical polymerization. For radical polymerization methods, there is non-intensified polymerization where monomers provide radicals for themselves by photoreaction and they are polymerized. On the other hand, there is intensified polymerization where a photopolymerization initiator is included and the initiator is decomposed to generate radicals by illumination so that monomers are polymerized.

Thus, Applicants reiterate that Kagami does not specifically teach how the radical polymerization is caused and that Kagami also does not disclose or suggest whether the photopolymerization initiator is included. Instead, Kagami merely teaches polymerizing two kinds of resins by photoreaction.

In contrast to Kagami, in the claimed invention, two different kinds of photopolymerization initiators are selectively included to obtain an optical transmission device having a desired condition. In other words, two different kinds of polymerizations are positively controlled by selection of the photopolymerization initiators.

For the foregoing reasons, Applicants respectfully submit that Kagami clearly does not disclose or suggest all of the features of the claimed invention.

Perfecting Priority / Declaration

Applicants note that, in the present Office Action, the Examiner states that “[t]he Applicant could obviate this rejection by perfecting priority. This could also be addressed by a sworn declaration by one of the common inventors specifically stating that the epoxy used was not cured using a cationic mechanism as the Applicants are in a position to address this question of fact” (see Office Action at page 5, lines 8-12).

With respect to perfecting priority, Applicants note that Kagami '188 was filed on March 27, 2000, which is prior to the filing dates of each of the four (4) Japanese priority documents for the present application (i.e., JP 2000-365223 filed on November 30, 2000, JP 2000-402883 filed on December 28, 2000, JP 2001-054705 filed on February 28, 2001, and JP 2001-165068 filed on May 31, 2001). Thus, perfecting the claim to foreign priority would not appear to be useful to remove the Kagami reference as prior art, as alleged by the Examiner.

With respect to filing a sworn declaration, the Examiner appears to be suggesting that Applicants file a Rule 1.132 Declaration that swears that "*the epoxy used*" in the Kagami reference "*was not cured using a cationic mechanism*" (see Office Action at page 5, lines 8-11). Applicants respectfully disagree with the Examiner's suggestion.

That is, Applicants submit that, as previously argued by Applicants, the Kagami reference clearly does not disclose or suggest that the epoxy necessarily was cured using a cationic mechanism. Thus, there is no need (and indeed, it would not appear to be appropriate) for Applicants to file a sworn statement with respect to undisclosed features of the Kagami reference.

B. Claims 1-28, 38, and 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kagami or U.S. Application No. 09/534,458, in view of Kawabata.

Applicants respectfully submit that the Examiner has not yet established a *prima facie* case of obviousness with respect to this rejection.

For example, Applicants again submit that Kagami and Kawabata do not provide any motivation (i.e., a reasonable motivation) for combining these references to arrive at the claimed invention.

That is, Applicants respectfully submit that the Examiner merely makes a conclusory statement (without more) that it would have been obvious to use “*cationically and free radically curable monomers known to be useful in refractive index imaging with selective curing*”, as allegedly disclosed by Kawabata, “*in place of the acrylates and epoxies specifically disclosed in the examples of by Kagami*” “*with a reasonable expectation of success based upon the disclosure of equivalents in refractive index modulation by Kawabata*” (see Office Action at page 6, numbered paragraph 8; emphasis added).

However, as the Examiner surely knows, merely identifying the individual elements of the claims in separate references is not sufficient to establish the obviousness of the claims. Moreover, the mere fact that references can be combined or modified (i.e., a reasonable expectation of success) is not sufficient to establish *prima facie* obviousness (see M.P.E.P. § 2143.01). The Office Action also must establish a reasonable motivation or suggestion for combining the references to arrive at the claimed invention (i.e., to do that which the patent applicant has done).

Applicants submit that the Examiner’s mere conclusory statements are not sufficient to establish a reasonable motivation for the alleged combination.

Indeed, Applicants also submit that, if such features of Kagami and Kawabata are in fact equivalent, as alleged by the Examiner, then the Examiner clearly has not established *why* the ordinarily skilled artisan would have been motivated to substitute the features of Kawabata for the equivalent features of Kagami.

C. Claims 35-37 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 08-320422, in view of Anderson ‘702 and Kagami JP.

The Examiner maintains that all of the features of claims 35-37 would have been obvious over JP '422 in view of Anderson and further in view of Kagami.

In responding to Applicants' traversal argument, the Examiner states that, in addition to the previous ground of rejection, "*[t]he Examiner also notes that the formed articles clearly deal with waveguiding devices. The rejection stands.*" (see Office Action at page 7, lines 21-22).

That is, the Examiner again seems to take the position that the references merely being in the same field of endeavor is sufficient motivation to establish obviousness. Applicants respectfully disagree.

Therefore, Applicants reiterate their traversal arguments (as set forth in the Amendment under 37 C.F.R. § 1.116 filed on August 6, 2004, which is incorporated herein by reference in its entirety) that the references merely being in the same general field of endeavor clearly is not sufficient motivation, by itself, to establish the obviousness of combining individual elements of the cited references to arrive at the unique combination of elements in the claimed method for forming an optical transmission device.

D. Claims 1-28, 38, and 39 allegedly conflict with claims 1-8 and 11 of Kagami '188 under 37 C.F.R. § 1.78(b). On the other hand, claims 1-28, 38, and 39 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 and 11 of Kagami '188 in view of Houlihan and Kawabata.

Applicants reiterate that claims 1-28, 38, and 39 clearly do not conflict with claims 1-8 and 11 of Kagami '188, as alleged.

For example, the claims of Kagami '188 do not disclose or suggest at least that "one of said first polymerization type and said second polymerization type comprises radical polymerization, and the other comprises cationic polymerization", as defined by independent claim 1.

Applicants also reiterate that the present Application is assigned to Toyoda Gosei Co., Ltd., whereas U. S. Application No. 09/534,458 (now U.S. Patent No. 6,703,188) is assigned to Toyota Chuo Kenkyusho (i.e., not Toyoda Gosei Co., Ltd.).

Thus, these applications are not "commonly assigned" as alleged by the Examiner and there is no double patenting issue in this case.

IV. FORMAL MATTERS AND CONCLUSION

Applicants reiterate their Request for Consideration of the Information Disclosure Statement (filed on November 19, 2004) that the complete IDS filed on August 6, 2004 in the above application be officially considered of record.

In view of the foregoing, Applicants submit that claims 1-28 and 35-39, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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